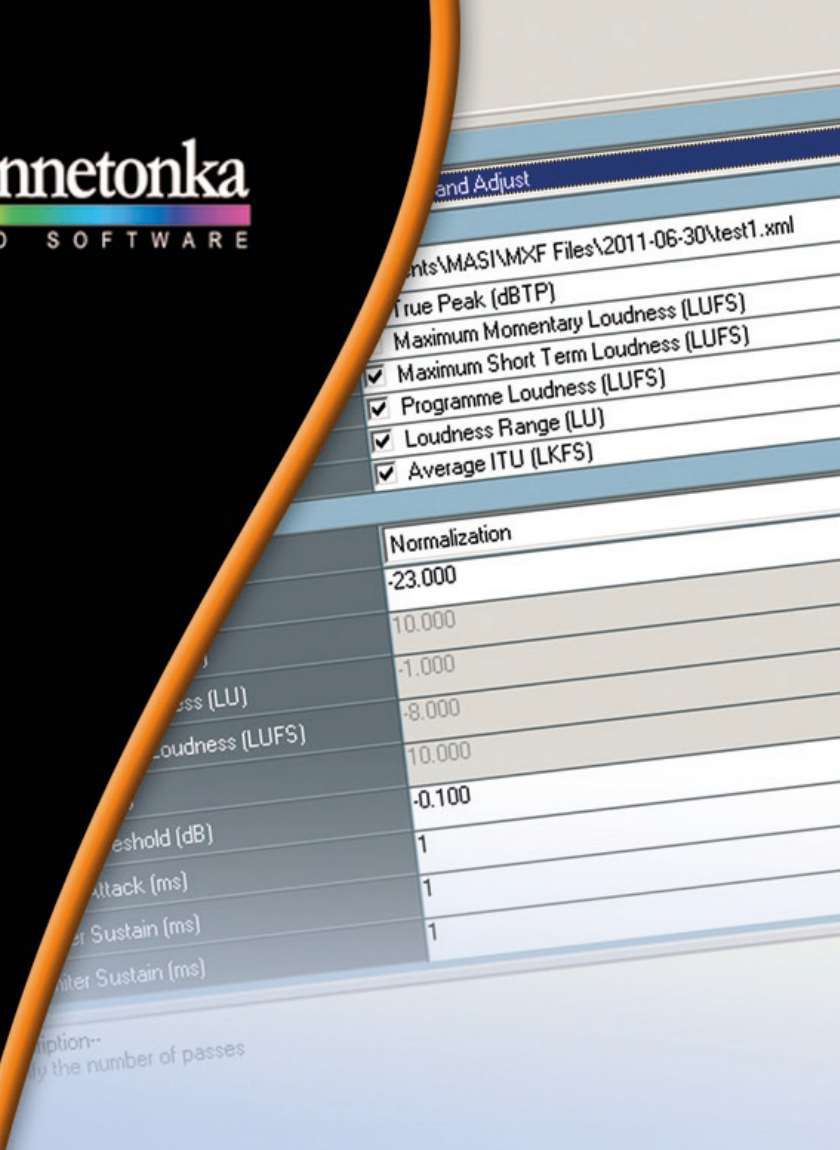
Minnetonka
AUDIO SOFTWARE



AudioTools™

Loudness Control for Harmonic ProMedia™ Carbon

harmonic

User Manual

ALCR

Minnetonka Audio Software, Inc.
17113 Minnetonka Blvd STE 300
Minnetonka MN 55345
www.minnetonkaaudio.com
+1-952-449-6481

Copyright © 2011-14 by Minnetonka Audio Software, Inc.

AudioTools is a trademark of Minnetonka Audio Software, Incorporated. All right reserved under International and Pan–American Copyright Conventions. All other trademarks, trade names, service marks, and logos referenced herein belong to their respective companies.

AudioTools Loudness Control

for Harmonic ProMedia™ Carbon

User Guide

Minnetonka
AUDIO SOFTWARE

Table of Contents

Overview 7

Introduction 7

AudioTools Loudness Control 7

Interface & Controls 9

Tabs 9

Source 9

Target 16

Convert 18

Appendix A 21

Program Configurations 21

Index 23

Overview

Introduction

Harmonic's ProMedia™, formerly Carbon Coder, is an extremely powerful, file–based processing and transcoding platform for video content. ProMedia Carbon is able to handle a wide range of sources and a broad range of file formats.

Minnetonka Audio has created a plug–in, AudioTools Loudness Control for Harmonic ProMedia™ Carbon, that adds flexible and convenient loudness control to Harmonic's file–based ProMedia Carbon software. The plug–in provides loudness measurement and optional loudness adjustment in a single package.

AudioTools Loudness Control

AudioTools Loudness Control for Harmonic ProMedia Carbon is comprised of two separately licensed components, a base loudness measurement module and an optional and highly valuable loudness adjustment extension. A valuable feature of AudioTools Loudness Control for Harmonic ProMedia Carbon is support for multiple instances, so one license covers multiple instantiations simultaneously within several different workflows.

Measurement

The key component of the new product is the AudioTools Loudness Measurement for Harmonic ProMedia Carbon module. It supports the fundamental new ITU and EBU loudness standards, ITU-R BS.1770-1, 1770-2 and EBU R 128 (2011), and is in accordance with the CALM Act (Commercial Advertisement Loudness Mitigation) as well as the ATSC's most recent Recommended Practice A/85:2011. The module measures Maximum Momentary, Maximum Short Term and EBU Programme Loudness, along with Loudness Range, Maximum True Peak level and ITU Program Loudness. The measurement results are formatted as XML.

Mono, stereo and multichannel PCM configurations can be measured. In addition, the overall loudness measurement results are reported throughout the file at one second intervals.

Adjustment

AudioTools Loudness Adjustment for Harmonic ProMedia Carbon applies loudness adjustment to the incoming data essence to reach your desired target Program Loudness or target Loudness Range values. Loudness adjustment can be performed in accordance with EBU R 128 or ITU BS.1770. Again, mono, stereo and multichannel PCM configurations can be processed, while target values can be set for EBU Programme Loudness, ITU Program Loudness and Loudness Range. Optionally, True Peak Limiting can be performed as well.

If the loudness level is different from the Target Loudness Value, adjustment is applied, and the Maximum True Peak Level is limited to previously specified target levels. If the loudness value already meets the requested target specification, AudioTools Loudness Adjustment for Harmonic ProMedia Carbon does not alter the file or essence, although ProMedia Carbon will transcode the video essence.

Interface & Controls

AudioTools Loudness Control for Harmonic ProMedia Carbon and AudioTools Loudness Adjustment for Harmonic ProMedia Carbon both utilize the existing ProMedia Carbon user interface with which you are already familiar. All controls appear in the tabbed control environment always available in ProMedia Carbon. For questions on how to navigate and use you installation of ProMedia Carbon, please refer to the current version of your Carbon Coder Server/Administrator or Workflow System (WFS) User Guide.

Tabs

As with other processes in ProMedia Carbon, source files and their attributes, processing settings and their resulting files are visible in the Source and Target tabs. The Convert tab starts the processing job.

Source

Specifying Your Source

The Source tab allows you to preview and select the source file to be processed. This tab also provides a visual display of essence metadata that you will need to set the processing parameters.

In the Source tab, the Add button invokes a file browser dialog that allows you to specify one or more source files. Once a file has been selected, the Remove and Remove All buttons become active, allowing you to revise your selections.

Adding Source Files

1. Select the Source tab.
2. Click Add to choose the file you want to convert.
3. When the Open File dialog box opens, select the file you want to convert.
4. Select a single file and click Open.
5. You will now see the selected file in the Source List.

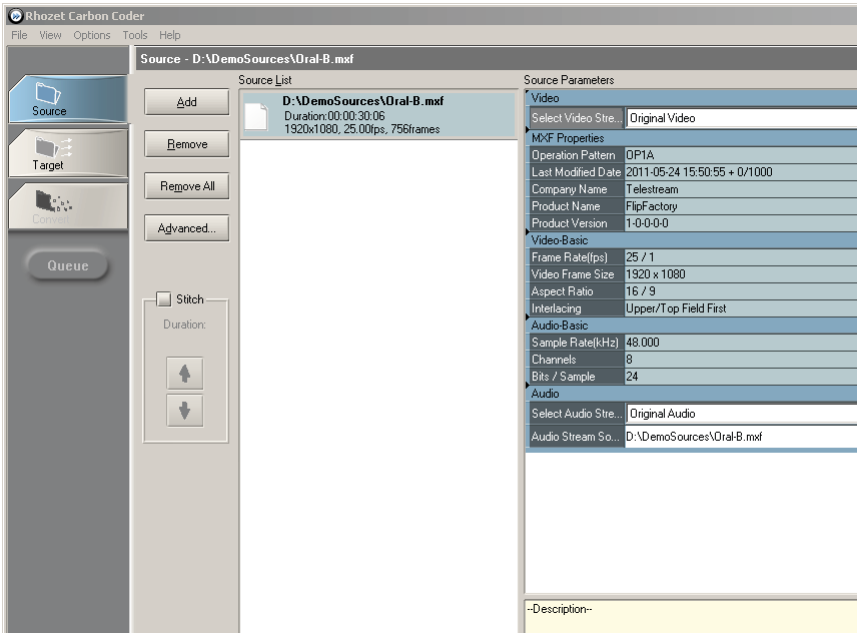


Figure 1: The Source tab with a source file selected

In the figure above, note the fourth section of metadata labeled Audio-Basic. This section contains the essence sample rate, number of channels, and essence word length or bits per sample. After specifying source files, make a note of each file's channel count, as you will need to know each file's number of channels before setting up the "filter" processing parameters in the Target tab.

AudioTools Loudness Control for Harmonic ProMedia Carbon will use the channel count as well as the channel configuration to measure and correct loudness. Channel configuration refers to the type, number and order of audio program mixes stored within the available number of channels. An example of a common program configuration for eight channels is a 5.1 surround program in channels 1 through 6, and a stereo program stored in channels 7 and 8. Appendix 1 lists all applicable program configurations used by AudioTools Loudness Control.

Advanced Tab

The Advanced tab is where you can specify video and audio filters or processing. The Advanced Features window allows you optimize the source file

prior to the encoding process. Here you can apply an audio filter to measure and/or modify the audio essence.

Accessing the Advanced Features window

1. Click the Advanced tab.
2. Double-click the Source entry in the Source List.
3. Right-click the Source entry and choose Advanced.

There are three subtabs within the Advanced Features window. These are Setup, Video Filter and Audio Filter. The Audio Filter subtab gains access to the processing parameters of AudioTools Loudness Control.

Within the Audio Filter window, the Add button allows you to select and insert the Minnetonka AudioTools Loudness Control plug–in. The filter, loudness measurement and correction, will be applied to the source file ProMedia Carbon or WFS performs transcoding.

Selecting the AudioTools Loudness Control plug–in

1. Click on the Add button.
2. Select the Minnetonka AudioTools Loudness Control plug–in.
3. From the Filter List, select the newly added plug–in.

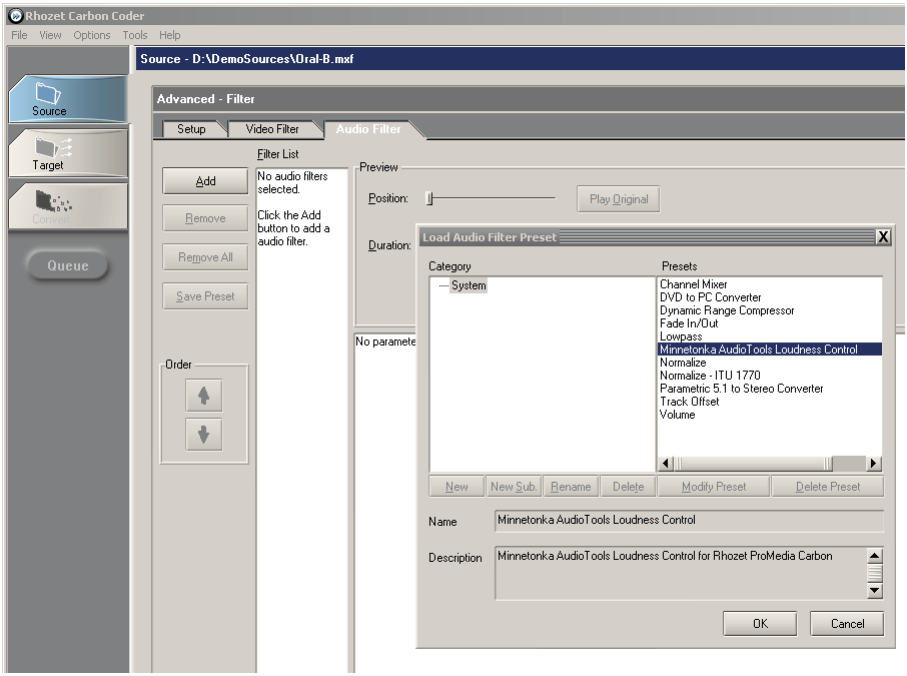


Figure 2: Adding the ATLC filter in the Advanced tab

Defining Processing Parameters

In the Audio section of the Audio Filter window, there are two Loudness Control choices or modes: Measure Only and Measure and Adjust. For either, it is important to specify the Program Configuration and Channel Order for the plug–in to provide meaningful results. The plug–in will process each program separately. Also note that the AudioTools Loudness Control plug–in will only process linear PCM essence, not Dolby E–encoded content. See Appendix A for supported program configurations.

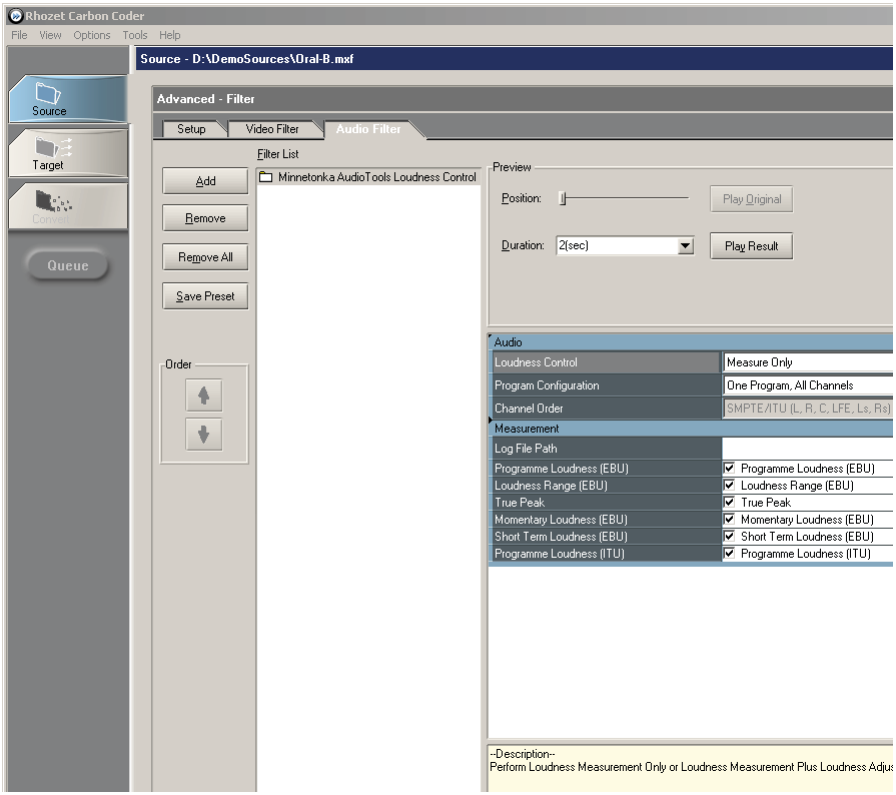


Figure 3: Advanced Filter Setup — Measure Only

In the Measure Only mode, AudioTools Loudness Control will measure the loudness of the audio essence but not modify the essence. Once the Loudness Control mode, Program Configuration and Channel Order are specified, the Measurement parameters need to be set.

Parameters include the explicit path for the log file that results from the processing, along with EBU Programme Loudness, EBU Loudness Range, True Peak, EBU Momentary and Short Term Loudness, and ITU Program Loudness.

Though only measuring loudness is required in some workflows, usually both measurement and adjustment of subjective loudness are required. In the Measure and Adjust mode, AudioTools Loudness Control will measure the loudness of the audio essence, then that information will be referenced to modify the audio essence so it conforms to your specified parameters.

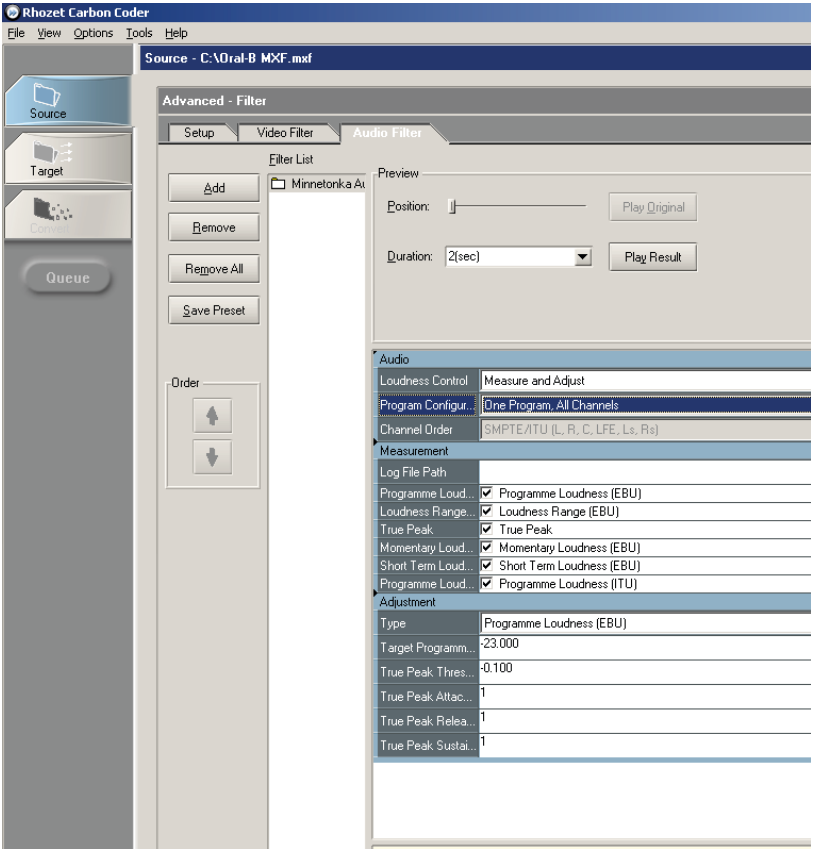


Figure 4: Advanced Filter Setup — Measure & Adjust programme loudness

In addition to the Audio and Measurement sections of parameters seen in the Measure Only window, the Measure and Adjust mode adds an Adjustment section. In Adjustment, you only need to specify the Type of adjustment, the most common being EBU Programme Loudness.

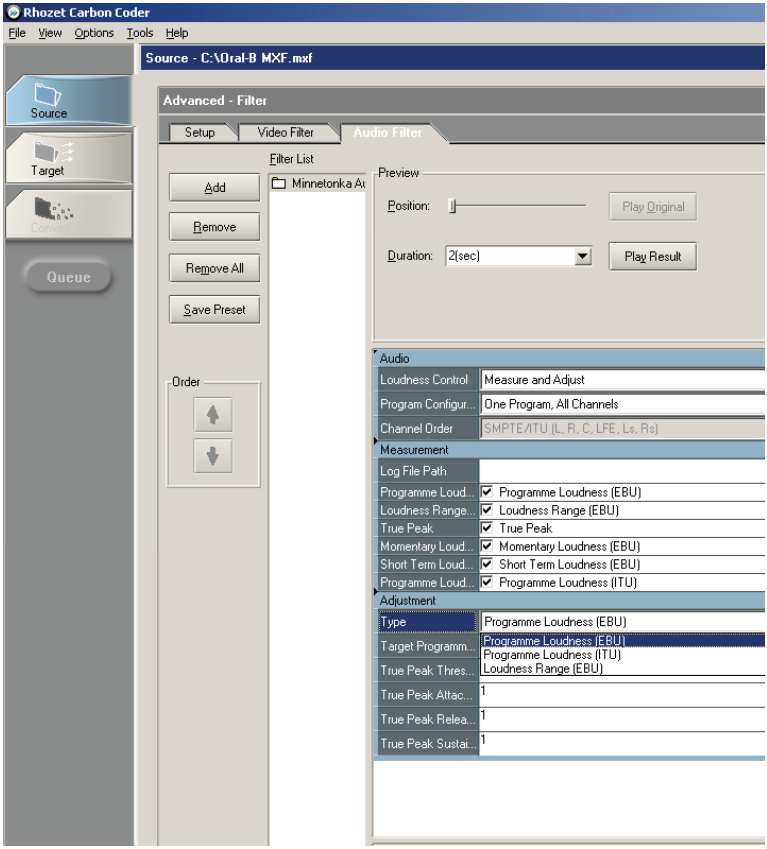


Figure 5: Loudness Adjustment choices

If the selected Adjustment Type is Programme Loudness (EBU) or (ITU), the available parameters are Target Programme Loudness, True Peak Threshold, True Peak Attack, True Peak Release, and True Peak Sustain. EBU Programme loudness conforms to the current BS.1770-2 recommended practice, while ITU Programme Loudness references the original BS.1770-1 recommended practice.

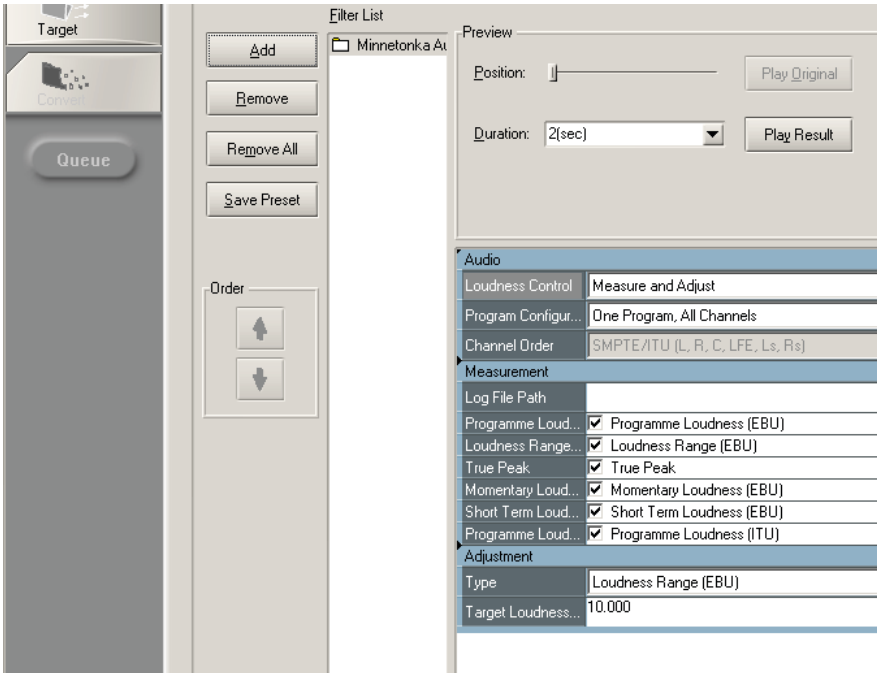


Figure 6: Advanced Filter Setup — Measurement & Adjust Loudness Range

EBU Loudness Range is also available. EBU Loudness Range adjustments will offset or modify the overall integrated program loudness. If the selected Adjustment Type is Loudness Range (EBU), the only available parameter is Target Loudness Range. To achieve the desired result, you will need to measure and adjust Loudness Range, then re-measure and adjust Programme Loudness, a two step process.

Note: In order to conform to either of the Programme Loudness Adjustment types, the time constant parameters, including attack, release and sustain, must remain at their default values as they are pre–defined to conform with their respective standards.

Target

The Target tab allows you to perform several tasks; to select the destination directory for the processed file, as well as specify the processing parameters used by ProMedia Carbon to process the source file. As with the Source tab, this tab also provides a visual display of metadata and all menus needed to set the processing parameters.

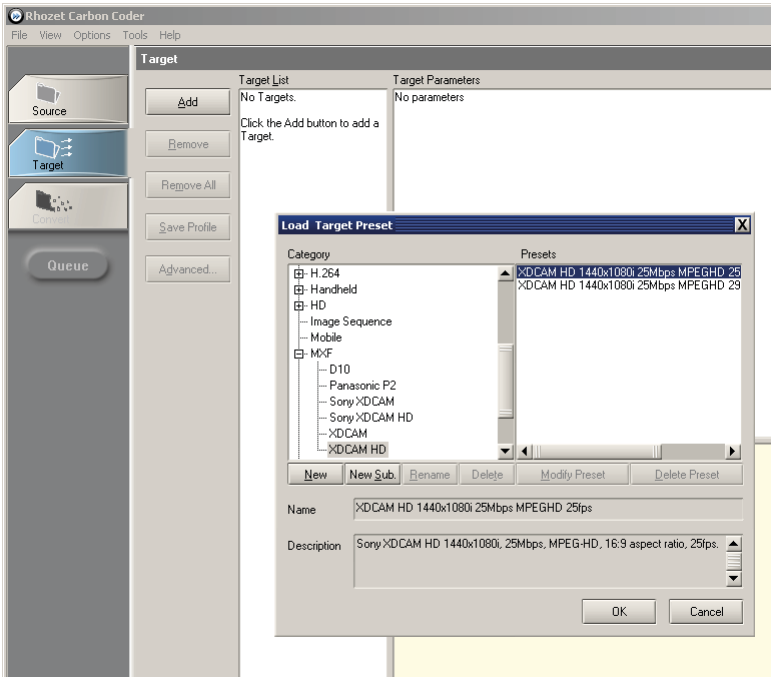


Figure 7: Loading a Target Preset in the Target tab

Target List

The Target List displays all of the target files you are planning to transcode. Use the buttons and options on the left side of the window to modify the list.

Add – Click Add to add target formats to the list.

Remove – Click Remove to remove the currently selected target format(s) from the list. You can also delete them using the delete key.

Remove All – Click Remove All to remove all the targets from the list.

Save Profile – Click Save Profile to save all target outputs in the target list, their customized settings, and their associated filter settings. A profile will typically be used to save a complex task that includes multiple targets and filters. The profile can then easily be re-applied to different sources.

Assigning Targets

After clicking Add, you will need to assign a target format.

1. In the Load Target Preset dialog box, click on a desired category on the left side.

2. Click on (+) next to a category (if needed) to display its sub-categories. the available presets for that category are displayed on the right.
3. When you have selected a preset, you will see complete details of the format settings in the description pane located in the bottom of the Load Target Preset dialog box.
4. You can use SHIFT+SELECT or CTRL+SELECT to grab multiple presets within a single category
5. Click OK to add this preset to your Target window.

Convert

After reviewing your job summary, click Convert to start the conversion process. After clicking Convert, your file will be processed and transcoded into the selected format.

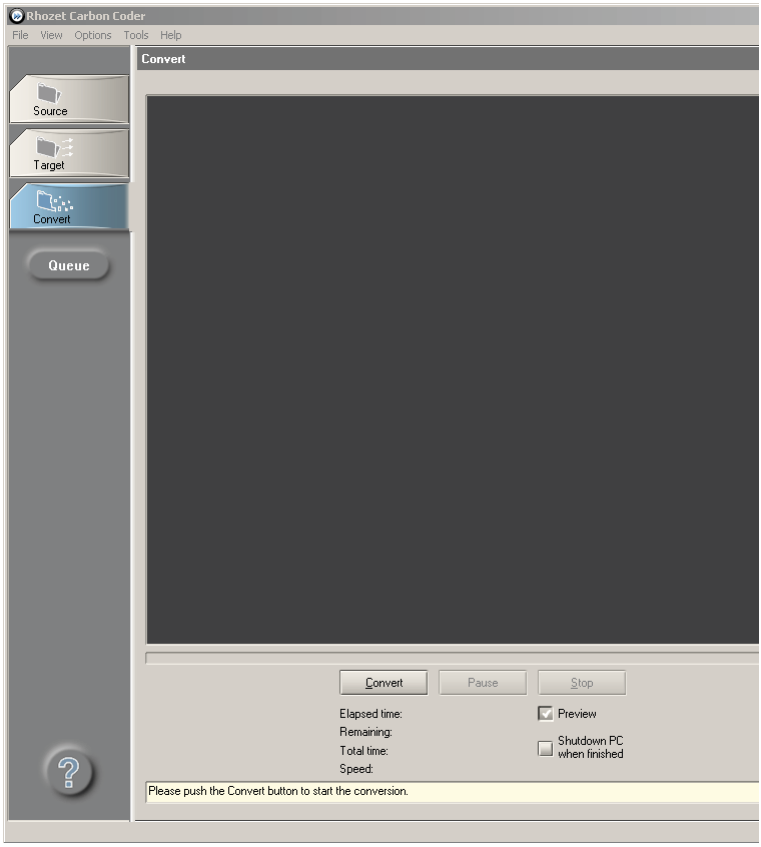


Figure 8: The Convert tab

The information box will display “Conversion Finished” when the conversion process is completed. Click Next to review the file’s location and conversion information.

Appendix A

Program Configurations

The table below lists program configurations as supported by AudioTools Loudness Adjustment for Harmonic ProMedia Carbon. Dolby Laboratories' standard program configurations are not shown as AudioTools Loudness Adjustment is only concerned with a subset of configuration that relate directly to loudness measurement. The Channel Order menu in the Audio Filter subtab allows you to specify specific channel configurations

The + symbol separates programs within a configuration. For example, 5.1 + 2 represents one 5.1 program and one stereo program. The × symbol indicates that the configuration consists of multiple programs all with the same number of channels. For example, 4 × 2 represents four two–channel programs.

Program Sequences
One Program, All Channels
Stereo
5.1 (Surround)
5.1 + 2 (Surround 1-6, Stereo 7-8)
2 + 5.1 (Stereo 1-2, Surround 3-8)
4 x 2 (Four Stereo Pairs)
3 x 2 (Three Stereo Pairs)
2 x 2 (Two Stereo Pairs)
4 + 4 (Two 4-Channel)
4 + 2 x 2 (One 4-Channel, Two Stereo Pairs)
4 (Four Channels)
7.1 (Eight Channels)

Index

A

accessing Advanced Features 11
adding source files 9
Advanced 10
assigning targets 17
ATSC 7
ATSC A/85 7
Audio-Basic 10
Audio Filter 11, 21
AudioTools Loudness Adjustment for Harmonic ProMedia Carbon 8
AudioTools Loudness Measurement for Harmonic ProMedia Carbon 7

C

CALM Act 7
channel configuration 10
Channel Order 12, 13, 21
Convert 18

D

defining processing parameters 12
Dolby E 12

E

EBU Loudness Range 13, 16
EBU Momentary Loudness 13
EBU Programme Loudness 7, 13, 14
EBU Short Term Loudness 13

I

instantiations 7
ITU & EBU loudness standards 7
ITU Program Loudness 7, 13

L

licensing 7
log files 13
loudness adjustment 8

loudness measurement
EBU Programme Loudness 7
ITU Program Loudness 7
Loudness Range 7
Maximum Momentary 7
Maximum Short Term 7
Maximum True Peak 7
Loudness Range 7
loudness standards 7

M

Maximum Momentary 7
Maximum Short Term 7
Maximum True Peak 7
Measure and Adjust 12, 14
Measure Only 12, 13
metadata
Audio-Basic 10
modes
Measure and Adjust 12, 14
Measure Only 12, 13
modules
AudioTools Loudness Adjustment for Harmonic ProMedia Carbon 8
AudioTools Loudness Measurement for Harmonic ProMedia Carbon 7
Momentary Loudness 15

P

plug-in
instances 7
program configuration 12, 13

S

selecting the plug-in 11
Setup 11
Short Term Loudness 15
source files
adding 9
specifying 9
Source tab 9
specifying source files 9

T

Tabs
Advanced 10
Audio Filter 11, 21
Setup 11
Source 9
Target 10, 16
Video Filter 11
Target 10, 16
Target List 17
Target True Peak Level 15
True Peak 13

U

user interface & controls 9

V

Video Filter 11

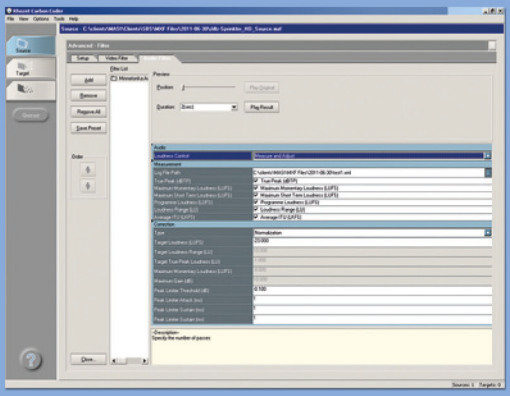
X

XML 7

AudioTools™
Loudness Control for Harmonic ProMedia™ Carbon

AudioTools Loudness Control for Harmonic ProMedia™ Carbon plug-in adds versatile and convenient loudness control to the file-based Harmonic ProMedia™ Carbon transcoding software. The plug-in provides comprehensive loudness measurement and flexible loudness adjustment.

AudioTools Loudness Measurement for Harmonic ProMedia™ Carbon – ALMR



Loudness Measurement according to ITU-R BS.1770- 1 & 1770-2, EBU R 128, and ATSC A/85

Options:

AudioTools Loudness Adjustment for Harmonic ProMedia™ Carbon — ALAR

Loudness adjustment in accordance with ITU-R BS.1770- 1 & 1770-2, EBU R 128, and ATSC A/85. Target values can be set for Programme Loudness, Loudness Range and Maximum True Peak.

CodeMeter USB dongle included.

For more detailed specifications and requirements, please visit our website:

www.minnetonkaaudio.com

©2014 Minnetonka Audio Software, Inc. — AudioTools Server and SurCode are trademarks of Minnetonka Audio Software, Incorporated. Harmonic and the Harmonic logo are registered trademarks or service marks of Harmonic Incorporated in the United States and other countries. Other company, product or service names mentioned herein my be trademarks of their respective owners. 140114

17113 Minnetonka Blvd
Minnetonka, MN 55345 USA
Phone +1 952 449-6481

Heimbachstrasse 40
D-41747 Viersen, Germany
Phone +49 2162 1062622

www.minnetonkaaudio.com
contact@minnetonkaaudio.com